

15

1.50 A YEAR

January 14, 1961

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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE



Centaur Booster

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A SCIENCE SERVICE PUBLICATION

Why we eliminated the earth's magnetic field ... almost

In an isolated laboratory in southwestern Ohio, GM Research scientists have reduced the earth's magnetic field to one ten-thousandth of its usual strength. This is about as weak as the interplanetary field detected by the Pioneer V solar satellite.

Why neutralize the earth's field? To perform with precision one of the more fundamental experiments in magnetism — measuring the Einstein-DeHaas effect. The measurement is simple in concept, experimentally difficult because of the tiny forces involved. It is made by suspending a ferromagnetic rod in a nearly field-free environment ... magnetizing the rod ... then measuring the effect (how much the rod rotates) when this known magnetization is reversed.

The beauty of the experiment is that the resulting values can be related directly to the motions of electrons in the rod. The values indicate the large portion of magnetization due to the *spin* of electrons ... and the slight, but theoretically important, remaining portion due to *orbital* motion of electrons.

These measured values are helping scientists form a better understanding of the perplexing phenomenon — ferromagnetism. Currently being pursued in cooperation with the Charles F. Kettering Foundation, this long-standing project is one of the ventures in basic research of the General Motors Research Laboratories.

General Motors Research Laboratories Warren, Michigan

Gyromagnetic Ratios

Iron	a 1.92	b 1.90
Cobalt	1.85	1.83
Nickel	1.84	1.83
Supermalloy	1.91	1.91

Comparison of (a) gyromagnetic ratio measured in the new Kettering Magnetism Laboratory with (b) corresponding ferromagnetic resonance measurements. These ratios would equal 2 if magnetization were due only to electron spin, $\frac{e}{m} \hbar$, if due only to orbital electron motion, $\frac{e}{m} \hbar$.

System of Helmholtz coils used to neutralize earth's magnetic field.



SOCIOLOGY

Find Key to Genius

The key to genius needs early recognition. Feeding, fighting and sexual activities are believed controlled by related nerve structures, Lillian Levy reports.

► THE KEY to genius is visible in the preschool child, but early recognition is urgent if this human resource is not to be wasted, Dr. Annette Rosenstiel, sociologist at Mills College of Education in New York, emphasized.

Only one percent of the nation's children may be classified as genius, she reported to the American Association for the Advancement of Science meeting in New York. U.S. Bureau of the Census statistics show that gifted children from five to 18 total 632,551. Under five there are approximately 200,000 gifted children.

"It is to this small group of one percent that we must look for the superman of the atomic age, and it is in the preschool group that we must concentrate to build for the future," she said.

Dr. Rosenstiel deplored the present tendency among adults to emphasize patterns of socialization and interpersonal relations rather than the development of mental ability in children.

"By the time a child goes to school, his early curiosity may have been blunted, his eager probings for knowledge thwarted, his questioning sidetracked, and his desire for learning dulled by what to him may appear to be adult disinterest and actual opposition," she noted.

Disturbed children often result from this adult rejection of the probing and questioning of a child. She said that the gifted child who is encouraged to develop his potential is "somewhat healthier and better adjusted than the average child."

Dr. Rosenstiel recommended nursery school experience as one way of providing an environment by which the child's general intelligence may be enriched. A child, however, should not be judged merely on his I.Q., which is based on cultural memory and on past achievements, but on his anticipated peak of development, what Dr. Rosenstiel calls his P.I.Q. or potential intelligence quotient.

P.I.Q. is based not only on demonstrated acquisition and achievement, by which I.Q. is measured, but on qualities such as curiosity, interest, determination, persistence and learning, and striving after higher goals.

Parents can do most to identify the gifted child, she said, and urged a "do-it-yourself" project for this identification, which has to be a joint undertaking of parents and the child.

Paul MacLean of the National Institute of Mental Health, Bethesda, Md., reported at the American Association for the Advancement of Science meeting in New York.

Experiments with squirrel monkeys showed that an electrode passed over the transitional region of the brain mechanisms associated with these activities aroused simultaneously sex responses, hunger behavior and fearful, or angry-type behavior.

The close tie-in with oral and sexual manifestations together with anxiety, fear and aggression demonstrated in the squirrel monkeys may give some insight into human behavior, Dr. MacLean said.

"The findings would seem to shed some light on psychiatric observations that the acts of destroying, devouring, sustaining and procreating all seem inextricably tied to one another," he said.

He noted that Freud in his monograph on the theory of sex commented on "the sexually exciting influence of some painful effects such as fear, shuddering and horror."

Dr. MacLean observed that often first sexual impulses in young boys have occurred during wrestling and grabbing encounters.

Dr. MacLean's study of the squirrel monkey behavior also showed that the mere

act of one of the animals looking into the eyes of another arouses aggression and sexual response.

In disturbed humans, looking into the eyes has been observed to arouse panic, particularly in schizophrenic patients. The looking impulse is particularly evident in children, who unselfconsciously contemplate their bodies and the nakedness of others. In adults, looking at the human body often arouses sexual impulses.

Dr. MacLean said also that in man there appears to be a direct relation between feeding, sexuality and altruism. He believes there is evidence that altruism such as is expressed in the concern for the welfare of others, the good deed, and even such work as is done by scientists to keep human progeny from suffering and dying is related to sexuality.

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Classroom Discipline

► CLASSROOM DISCIPLINE is the number one school problem practically everywhere, but it is more acute in United States schools, a University of California at Los Angeles educator reported following a six-month study tour of 14 European and Middle Eastern countries.

The causes and solutions vary from nation to nation, Dr. Lawrence E. Vredevoe told the annual meeting of the American Association for the Advancement of Science in New York.

Students may be cheered by the news that caning and paddling, well-applied remedies for breach of class-room discipline, are becoming less respectable. However, in at least one private European school, parents



PLANT GROWTH ROOM—Control of plant growth is the practical aim of basic research conducted in this room at the U. S. Department of Agriculture's Research Center, Beltsville, Md. Growth characteristics of seeds and plants, the effectiveness of fertilizers, weed killers, anti-insect chemicals and disease are tested in the growth room provided with General Electric fluorescent lamps and 100-watt bulbs.

Eating, Fighting and Sex

► FEEDING, FIGHTING and sexual activity appear to be controlled by closely related nerve structures in the brain, Dr.

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are still charged for canes as a "medical" expense.

Comparing discipline problems in the U. S. with those abroad, Dr. Vredevoe listed some factors that make it harder to enforce discipline in the U. S.

Among the factors are lack of one dominant culture or religion, confused standards and attitudes toward law enforcement, longer and more rigidly enforced compulsory education, use of cars by many high school students, population mobility, resulting in more transfers and less home stability, confused attitudes about discipline and authority in the home, and shortage of competent administrators and teachers to meet the demand of a rising enrollment.

Schools in the U. S. often are asked to play the role of parent and church, "an impossible task," Dr. Vredevoe said. Despite

the discipline handicap in the U. S. school systems, Dr. Vredevoe found certain advantages in the systems here not generally shared in Europe or the Middle East.

Among U. S. advantages are the closer relationship between home and school, emphasis on the worth of the individual and broad opportunities regardless of social or economic background; the comprehensive secondary school program that can be varied according to the abilities of individual students, and improved professional status of the American teacher.

He also called attention to the recent status rise in the U. S. of the "egghead" in secondary schools, and the accompanying decline in the athlete and hot rod.

There also is much greater research here in the areas of child growth, development and guidance.

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EDUCATION

Students Are Uninformed

► COLLEGE STUDENTS are poorly informed about current affairs, Dr. Josef E. Garai of the Staten Island Community College reported.

They know more about entertainment, sports and well known brands than the important issues of the day and the persons involved in them, he reported at the annual meeting of the American Association for the Advancement of Science in New York.

Dr. Garai questioned 437 students enrolled in five of the leading colleges in the metropolitan New York area to determine the level of their information on events of the day. Eighty-one questions required identification of persons, places, objects or issues of importance in political life. Twelve of these referred to people or events in the entertainment or sports world and to certain brand names.

Only 17% of the students knew the name of the U. S. Secretary of Defense; only 5.1% knew the name of the Secretary of Health, Education and Welfare; 4.6% knew the name of the capital of Australia; and in this space age, only 7.4% knew the

weight of the heaviest satellite (5 tons) still circling the earth and the name of the launching country (Russia).

However, 65% were familiar with the comic page character Pogo; and 61% knew that entertainer Ernie Kovacs is married to Edie Adams.

The colleges involved in the study are the Juilliard School of Music, Staten Island Community College, New York University School of Commerce, Pratt Institute and Hunter College. Since 1958, however, there has been a rise in the general level of information among these students, a comparison of a study made then with the 1960 study showed.

The information level and awareness of present day world issues increased remarkably, however, among a group of students queried who were required to read the New York Times daily. Testing showed a score rise from an initial average of 18% on a pretest before the start of the compulsory news reading in February, 1960, to 49% in March, 68% in April and 80% in May.

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PUBLIC SAFETY

Many Reactor Accidents

► THE FATAL ACCIDENT at the Idaho test station Tuesday night (Jan. 3) is not the first reactor mishap in the history of the United States Atomic Project to cause injury or death as an Atomic Energy Commission spokesman has claimed.

There have been at least two deaths and more than 30 injuries, resulting in burns, radiation sickness and even amputation from AEC reactor accidents. But these are from accidents in "critical experiments facilities" reactors as distinguished from "operating" reactors, the AEC spokesman told SCIENCE SERVICE.

The critical experiments facilities are used for the testing and study of fissionable materials at various degrees of enrichment and different shapes. They differ from operating

reactors only in that the fuel assembly is flexible rather than fixed in order that the assembly may be changed quickly and easily according to the test being made.

In the experiments facilities, the experimental chain reaction is maintained at or near zero power so that little radiation is emitted. Operating reactors, which produce nuclear materials, often are maintained at high levels of power.

The Idaho reactor in which the recent explosion occurred is neither the experimental or the operating type of reactor. It is a "prototype" of the operating type of reactor, Mr. Dan Hayes of the AEC office of health and safety said. The Idaho accident was the first fatal accident connected

with this kind of prototype reactor, he said, but not the first reactor accident.

He said the accident may have resulted from a chemical reaction, evolution of hydrogen, a booster-type explosion, or "criticality" (a running away, so-to-speak, of the chain reaction).

Neither the cause of the accident nor the full extent of damage or exposure will be known for some time. Decontamination and investigation must proceed slowly, Mr. Hayes said, to avoid undue risk from radiation to those persons involved in examination and clean-up of the site.

The explosion, which caused the death of three men, occurred about 40 miles from Idaho Falls, a city of about 34,000 people.

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MEDICINE

Morphine as Last Resort

► **TOO MANY** incurable patients become mentally disturbed because they are given morphine before their pain warrants it.

Newer drugs without hypnotic and other undesirable side effects can be substituted for the older pain killer, Dr. Raymond Gavin, consultant anesthetist in Taunton and South Somerset Group of Hospitals, England, said.

In the British Medical Journal, Dec. 31, 1960, Dr. Gavin lists five drugs that can rob cancer of much of its dread pain.

"Many of these drugs are specific analgesics (pain killers) and are almost without hypnotic action," he said. Under the influence of such drugs patients may be relieved of their pain while fully able to work or deal with business affairs.

"At times the hypnotic effect of morphine is highly desirable," he said, "but probably mostly in the terminal stages of pain from malignant disease." If morphine is given to patients too soon, he pointed out, "the last months of life are spent in disorientation

and uselessness, which is profoundly disturbing to their family and friends."

The five drugs Dr. Gavin listed as showing considerable promise in controlling extreme pain are oxycodone pectinate, dihydrocodeine bitartrate, levorphanol tartrate, methadone hydrochloride, and dextromoramide.

Prolonged administration of any pain killer, he said, often produces depression of mental activity, and much benefit can be gained from the use of amphetamine or methyl phenidate hydrochloride to elevate mood.

In the severe pain of primary or secondary cancer, Dr. Gavin said phenol, or carbolic acid, in five percent solution in lipid solvents such as glycerin or myodil has proved relatively safe. It is sometimes a remarkably efficient treatment especially in pelvic and lower-limb growths.

He advised the establishment of pain relief clinics such as are operating in Britain on a small-scale.

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MEDICINE

Sobering Up Alcoholics

► **A NEW METHOD** for sobering up alcoholics fast has been found—inject them with the thyroid hormone, L-tri-iodothyronine.

Use of the hormone to sober highly intoxicated persons within an hour or two is still in the experimental stage. The drug is not available to the public at the present time.

The thyroid hormone treatment is expected to be particularly valuable in hospitals where drunk patients who are unconscious may have been in an accident or the victim of an attack. When sober, they can give a medical history.

Use of L-tri-iodothyronine on 12 patients is reported in the New England Journal of Medicine, 263:1336, 1960, by Dr. Marshall Goldberg, Robert Hehir and Marc Hurovitz, all of St. Vincent's Hospital, Worcester, Mass.

They studied 20 patients who were chronic alcoholics. The alcoholics were selected at random from the alcoholic ward and 12 were injected with a solution prepared from sodium tri-iodothyronine powder. The remaining eight were untreated for comparison.

Most of the treated patients were declared sober within two hours after injection and were able to give a rational medical history. The researchers said the alcohol odor disappeared from the patients' breath within the two-hour period, while in the untreated patients it took six to ten hours for the alcohol odor to disappear.

A 45-year-old truck driver who was brought to the hospital in a semi-conscious state by a police ambulance after being found unconscious in the street was able to

sit up in bed fully oriented within one hour after receiving the injection. Within 90 minutes he was able to walk a straight line and hold out his hands without obvious tremor. Four observers could detect no alcohol on his breath.

Patients with known coronary-artery disease were excluded from the treated group because of the detrimental effect of circulating thyroid hormones on heart function.

The investigators point out that final conclusions cannot be drawn because of the small number of patients studied, and they suggest further research to verify their findings. They also advise using tri-iodothyronine as an adjunct to present treatments of alcoholics and not alone.

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PUBLIC HEALTH

Push Nation-Wide Health Insurance Program

► **THE AMERICAN** Medical Association has at least three general goals in mind in setting up a nation-wide voluntary health insurance program.

C. Joseph Stetler, director of AMA's legal and socio-economic division, said the AMA would try to include more persons in group coverage by encouraging employers to subscribe to available insurance plans.

The AMA also will push for a clause in insurance contracts stating that the insured cannot be dropped because he has reached age 65.

Members of AMA are also being encouraged to cooperate in programs similar to

those now used in about 35 states, in which doctors' fees are reduced for patients over 65.

Last May, Mr. Stetler and other spokesmen indicated that AMA would not propose solutions to the nation's medical problem before hearing reports from the White House Conference on Aging in January, 1961.

Action was taken before the conference, however, when AMA's policy-making House of Delegates noted that "Current social, political and economic developments compel a new and revitalized effort to make voluntary health insurance successful."

The result was a resolution directing AMA to consolidate its efforts with Blue Cross, Blue Shield and the American Hospital Association in advancing the "voluntary non-profit prepayment concept" of health insurance.

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RADIO ASTRONOMY

More Than 50 Radio Stars Found by Observatory

► **MORE THAN 50** radio sources, many beyond the Milky Way galaxy, have been found by the new California Institute of Technology Radio Observatory, Pasadena, Calif. One aim of its observing program is to determine the mechanism responsible for the strong radio emission of some sources of radio waves.

On a map made of a section of the Milky Way, the configuration of the radio stars follows the visual patterns closely. The wiggly lines of this map may be compared with those of a topographical map, the lines from the outside toward the center representing increasing intensities of radiation.

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RADIO MAP OF MILKY WAY

PUBLIC SAFETY

U.S. More Vulnerable

► THE UNITED STATES is now more vulnerable to Soviet attack because of the locations and characteristics of its missiles and nuclear weapons systems. Soviet advances in the accuracy and striking power of intercontinental ballistic missiles have added to the danger, Dr. Ralph E. Lapp of Alexandria, Va., warned here.

Particularly vulnerable are the Atlas and Titan missile sites, Minuteman and B-70 systems, he told the American Association for the Advancement of Science meeting in New York.

Atlas and Titan missile sites, with an individual capacity of about a five-megaton nuclear warhead, could be wiped out by three or four Soviet missiles per target. The explosion of nuclear warheads of this size from such an attack would destroy an area about 20 times greater than that blasted by the Hiroshima bomb.

Dr. Lapp estimated that there are 270 such missile sites in the U.S., many near enough to urban areas to make the recently announced Air Force policy of "spare the cities" in the event of nuclear war a "paradox."

An example of the paradox of this "incredible policy," he said, are the 18 missile bases in the Rome-Utica area of New York.

"Because of their location, an enemy attack—even one limited just to these sites—would subject the entire civilian population in the area to disastrous fallout," he predicted. This would apply also to Minutemen bases concentrated in the northwest and western United States, and those that can be moved on trains.

The only weapons system that has the location, mobility and concealment characteristics that perhaps could allow cities to escape destruction in the event of war is the Navy's submarine-based Polaris missile, Dr. Lapp said.

He also challenged the need for continued stockpiling of fissionable material. The U. S. nuclear stockpile already exceeds 500 tons, he reported. In terms of Hiroshima bombs this is equivalent to 100,000 bombs if totally converted.

Dr. Lapp said he hoped the Kennedy administration would make a searching examination of U. S. weapons system and nuclear policy, meanwhile continuing the ban on testing for at least one year.

He said the administration must be of a single mind and voice in order to control the chaos that has resulted from variance of opinion and policy in the past.

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GENERAL SCIENCE

USSR Wants Disarmament

► PRESIDENT-ELECT John F. Kennedy's closest pre-election adviser on nuclear weapons and disarmament problems, Dr. Jerome B. Wiesner, reported he is convinced that the Russians are "sincerely interested" in putting an end to the threat of nuclear war.

His confidence in Soviet good intentions is based on his experiences in Moscow last month at the Pugwash conference, he said. This was an international meeting of scientists interested in disarmament and in devoting the atom's energy to uses that will benefit mankind.

"In Moscow, I was heartened by the fact that the Russians got a better understanding of our position on arms control; and, I believe, we now have a clearer understanding of their position. One can be hopeful

that if both countries are willing to make concessions and conduct experiments in a spirit of mutual trust, an agreement on arms control can be reached," the director of the research laboratory of electronics at the Massachusetts Institute of Technology stated.

Dr. Wiesner reported on the Pugwash conference at a White House meeting of the Science Advisory Committee with President Eisenhower. He served on the Committee advising the President even while he was actively campaigning for the President-elect.

Dr. Wiesner has been prominently mentioned as the possible chairman if such a group were to be continued by the President-elect.

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GENERAL SCIENCE

Red China Bans Journals

► COMMUNIST CHINA has placed an effective embargo on export to the United States of most of the science journals just when the United States Government and Western scientists are awakening to the need of learning what is happening technically in mainland China.

Only about 20 out of more than 140

science journals previously seen have been available since about October, 1959. Evidently the Chinese authorities decided that money they have received in subscriptions to their journals did not offset what they had to pay out for the American journals they desired.

Barter by individual scientists to send

United States journals in exchange for particular Chinese publications seems to be working despite the official reluctance.

Plans are now being made to locate these volunteer receipts and distribute them more widely by full copy in microfilm in original Chinese or translation. The Massachusetts Institute of Technology library has the largest collection of current Chinese journals at the present time.

The critical situation became known during the sessions of the American Association for the Advancement of Science meeting in New York where a score of experts reported advances in Red China that surprised many American scientists.

A crash program to teach American scientists sufficient Chinese to allow them to read, digest and report to their colleagues what is happening in mainland China scientifically was advocated by one conference at the meeting. It was believed that perhaps enough Chinese could be taught in a half-year of intensive study to allow scientists to become as competent in Chinese as some have become in Russian in a relatively short time. The possibility that China will adopt an alphabet for writing its language is foreseen for the next 10 to 15 years. Although this would greatly aid translation, it would probably come too slowly to affect the need for carrying on a relatively extensive program for learning Chinese and making possible its translation for technical and scientific purposes.

Under present conditions some scientists believe that exchange of scientists between the People's Republic of China and the United States is desirable. However, any concerted efforts toward this aim is hampered by political considerations that are not yet resolved.

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More USSR Moon Photos

► THE RUSSIANS may have better pictures of the dark side of the moon than those they have made public, Dr. Edward Anders, University of Chicago scientist, reported. Dr. Anders received the Newcomb Cleveland Prize at the American Association for the Advancement of Science meeting in New York for his new theory on the life and death of meteors.

The rear-view pictures of the moon were taken from the lunar orbiting satellite launched by the Russians Oct. 4, 1959. Suspicion that the Soviets may have better pictures was brought to Dr. Anders' attention by Avram Katz of Rand Corporation, who made a detailed analysis of the Soviet lunar photos.

On the basis of this analysis, Dr. Anders said, it is believed the Soviets may have pictures of the dark side of the moon as good as those taken of the moon's face. If the Soviets have such detailed pictures, Dr. Anders was at a loss to explain why they did not make the photos public.

Other than the photos, the Soviet lunar probes revealed little new about the physical properties of the moon or the solar system, Dr. Anders said.

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ARCHAEOLOGY

Find Hand and Foot Bones

► **THE FIRST BONES** of a foot and a hand of earliest man have been excavated at Olduvai in Tanganyika, East Africa.

Dr. L. S. B. Leakey of the Coryndon Museum, Nairobi, Kenya, reported in *Nature*, 188:1050, 1960, that he found the fossil remains of a large part of a left foot, six finger bones, fragments of a skull, some teeth, two clavicles and two ribs.

The find was made close to the spot where Dr. Leakey in 1959 discovered the first remains of the Nutcracker man, or *Zinjanthropus boisei*, a primitive man who lived more than 600,000 years ago.

That Nutcracker man was a true man seems certain from the presence of tools found with his remains. Included in the new find were remains of animal fossils, many of them new to Olduvai and believed by Dr. Leakey to be new to scientists.

The presence of a remarkable tool for working leather indicates that this early man possessed a certain amount of culture and ingenuity.

Dr. T. Dale Stewart, physical anthropologist of the Smithsonian Institution, told *SCIENCE SERVICE* that if a complete hand can be found, it may throw some light on whether man's ancestor was closer to the apes or the monkeys.

The apes generally have long, straight hands whereas the monkeys have broader hands. The hand of early man would indicate to some degree the stage of man's hand development, Dr. Stewart said.

The brain's evolution was influenced by the use of the hands. As man began to walk upright and did not use his hands to sup-

port his body, his hands were free to make useful things. The brain responded and developed as a result.

A rudimentary form of speech, developed by early man, possibly speeded up tool-making and cultural pursuits. Dr. Stewart said that the early man Dr. Leakey had discovered very likely possessed such a rudimentary form of speech.

Dr. Stewart added it is now known that man's upright posture preceded his large brain. The foot of the man just found would indicate what stage of adaptation to walking upright this man had made. It has already been established from the skull of the Nutcracker man that he walked upright.

The foot and hand of an individual will also give a clue to his stature, his height and overall size.

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GEOLOGY

Drilling Equipment for Mohole to Be Tested

► **A DEEP-SEA** drilling program beginning in March will test equipment and techniques for probing the secrets of the mantle underlying the earth's crust.

The National Science Foundation and the National Academy of Sciences-National Research Council reported the program is part of the Project Mohole, whose purpose is to drill through the earth's crust to determine what material lies deep in the solid earth.

Test site for the preliminary drilling is near Guadalupe Island, off the western

coast of Mexico, in 12,000 feet of water. Prior drilling in water has been confined to the relatively shallow depths of the continental shelf. If the first hole is successful, several additional holes may be drilled to obtain more operating and scientific data needed for the further planning of Project Mohole.

A contract for the test drilling has been awarded to Global Marine Exploration Co. of Los Angeles, Calif.

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PHYSICS

Nobel Prize Winner Plans New "Atomic Time Clock"

► **THE "ATOMIC TIME CLOCK"** technique can be made to measure the age of matter 200,000,000 to 300,000,000 years old, Nobelist Willard Libby of the University of California, Los Angeles, believes.

His present "atomic time clock," for which Dr. Libby won the 1960 Nobel Prize in Chemistry, uses radioactive carbon-14 to date any organic matter that lived within the last 50,000 years, from the trees of the Ice Age to the linen wrapping of the Dead Sea Scrolls.

By experimenting with new chemical elements and techniques, Dr. Libby hopes to develop dating methods that could shed light on the "dark times" between 50,000 and 200,000,000 to 300,000,000 years ago.

Headquarters of the research project will be isotope laboratory of the Institute of Geophysics and Planetary Physics on the UCLA campus. A radiocarbon dating apparatus is being set up with the support of the National Science Foundation.

Dr. Libby plans to study the application of present dating techniques to other than organic matter. He expects to develop new techniques for extending the present 50,000-year clock, to use tritium to trace the age and sources of water supplies, and to measure radioactive fallout to gain a clear picture of how air circulates and mixes in the stratosphere.

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MINERALOGY

Man-Made Diamonds One-Carat Size Produced

► **LARGE**, man-made diamonds, more than a carat in size, have been produced for the first time. The diamonds are dark in color and cannot now be used for industrial purposes because of structural imperfections.

They were made at the General Electric Research Laboratory, Schenectady, N.Y., where the first man-made diamonds were also made.

Small man-made diamonds have been perfected to the point where they are superior to natural diamonds for many uses. These small diamonds are used for cutting, grinding and polishing.

Industry uses carat-size diamonds for drills, dressing tools, dies and single point cutting tools.

The major source of natural diamonds is the Congo.

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FIRST CARAT-SIZED MAN-MADE DIAMONDS

MEDICINE

Radioactive Iodine Helps In Certain Heart Ailments

➤ USING RADIOACTIVE iodine to slow down the metabolic rate is a promising new method of treating certain types of heart disease.

Patients with severe chest pains (angina pectoris), congestive heart failure and recurring irregular heart rhythms (tachycardia and auricular fibrillation) are given small, harmless doses of radioactive iodine periodically. The iodine is selectively taken up by the thyroid gland, which influences the body's metabolic rate. The iodine's radiation reduces thyroid activity. As a result, metabolism is slowed and the heart's work load markedly decreased.

Of the 202 patients so treated, 167 showed marked improvement. Patients with angina were generally relieved of pain and were able to exercise more freely. Personality improvement was also observed, probably as a result of decreased emotional tension from lower metabolic rate.

This marks the first time this treatment has been used on patients with irregular heart rhythms. In most cases the heart rhythm became normal.

Experiences with 202 patients treated with radioactive iodine are reported in the American Journal of Cardiology, 6:952, 1960, by Drs. Eliot Corday, Henry L. Jaffe and David W. Irving.

The study was a joint effort by the University of California at Los Angeles and the University of Southern California Medical Schools, the work being conducted at the Cedars of Lebanon Hospital.

• Science News Letter, 79:24 January 14, 1961

GENERAL SCIENCE

Investigation Gives FDA Clean Bill of Health

➤ THE FOOD and Drug Administration will be turned over to the new administration with a clean bill of health and a new "internal inspection" officer to keep it clean.

A special investigating unit appointed by Secretary Arthur S. Flemming of the Department of Health, Education and Welfare reported in Washington, D. C., that FDA personnel "are more than ordinarily dedicated to the purposes of the agency."

The investigation grew out of improprieties of Dr. Henry Welch, former director of the FDA antibiotics division, who during a seven-year period received about \$200,000 for services related to an editing job for MD Publications and Medical Encyclopedia, Inc., while still employed by FDA.

The special investigating unit, directed by Charles H. Kendall, general counsel of the Office of Civil and Defense Mobilization, made six recommendations that Secretary Flemming expects to put into effect before Gov. Abraham Ribicoff takes over the HEW secretaryship. They are:

1. That existing regulations concerning the conduct of FDA employees be re-examined and that the receipt of gratuities from industries subject to regulation on both food and drug laws be expressly forbidden.

2. That an office of internal inspection be established in FDA reporting directly to the Commissioner to make investigations of alleged misconduct by employees. (The FDA Commissioner is expected to fill this office by Jan. 16, 1961).

3. That a reasonable control be put upon the access of industry representatives to FDA personnel considering actions affecting the industry.

4. That a closer relationship between FDA and state and local health authorities be encouraged.

5. That reorganizational steps be taken to assure FDA scientists that their views will be presented and considered in the making of decisions at the Commissioner's level.

6. That funds be sought to make possible wider distribution of FDA reports and bulletins and that the participation of FDA scientists in scientific meetings be encouraged.

• Science News Letter, 79:24 January 14, 1961

EPIDEMIOLOGY

Waters of Aswan Dam Could Bring Epidemic

➤ WHEN THE ASWAN High Dam on the Nile River is completed, its snail-infested waters could bring a serious epidemic of schistosomiasis to Egypt.

This prediction, by Prof. Henry van der Schalie of the University of Michigan Museum of Zoology, is based on a study of the disease problem in Egypt.

Bilharziasis, or schistosomiasis, is a disease caused by a human blood fluke or flat worm. The parasite requires a snail host during a portion of its life cycle, and more irrigation water will mean more snails.

Dr. van der Schalie said converting the Nile basin above Cairo to perennial irrigation will at least increase the incidence of vesicular blood fluke, the disease-causing organism, to 60% or more of the population.

Officials at the United Arab Republic embassy in Washington discounted the danger, saying it would be offset by the increased standards of living as the dam produces power for industries. Farmers could use cheap rubber boots to protect themselves while irrigating.

• Science News Letter, 79:24 January 14, 1961

CONSERVATION

Green Ranges Expected From Air-Sown Seeds

➤ GRASS SEED will rain from a low-flying plane next July in an experiment aimed at turning about 480 acres of Federal rangeland green. Under a U. S. Bureau of Land Management grant, University of Arizona scientists, headed by Dr. Andrew L. McComb, will have specially prepared pea-like seed pellets, made of clay, and regular seeds dropped over the test areas, as yet unselected, just before the heavy seasonal showers. The special seed pellets, made by Dr. Lytle S. Adams, a retired dental surgeon, contain fertilizer for the seeds and repellents for rodents and insects.

• Science News Letter, 79:24 January 14, 1961

IN SCIENCE

SURGERY

Fewer Surgical Deaths For Hereditary Bleeders

➤ "BLEEDERS" or hemophiliacs, who suffer from a hereditary blood condition in which the blood clots slowly or fails to clot, can now survive operations as well as normal patients.

Drs. Edward P. Passaro and Prentiss M. Dettman of Ohio State University College of Medicine, and Dr. Blanca Smith of Children's Hospital, Columbus, Ohio, report dramatic reduction of deaths of hemophiliac patients in the American Medical Association's Archives of Surgery, 81:864, 1960.

The surgeons report 16 cases of hemophiliacs who have undergone surgery for abdominal ailments, all of whom recovered. Fresh whole blood or fresh frozen plasma (FFP) is used most often in treating hemophilia today. In former years, deaths ranged from 30% to 60% among the bleeders who underwent surgery.

Complications occurred, such as postoperative bleeding, kidney shutdown, jaundice and congestive failure resulting from transfusions, but no deaths were reported.

Appendicitis has been the most frequent cause of major surgery, with tonsillectomies and teeth extractions the most common indications for minor operations among hemophiliacs.

• Science News Letter, 79:24 January 14, 1961

ASTRONOMY

Project Getting Ready To Photograph Planets

➤ PRELIMINARY TESTS have started for Stratoscope II, a project to photograph planets and stars from 80,000 feet in the fall of 1961.

Pictures of a clarity never before obtained are expected with the balloon-borne 30-inch telescope system, which weighs more than two tons.

Better astronomical photographs can be taken from 80,000 feet because no atmospheric turbulence or dust are present to distort or obscure seeing conditions. The balloon is scheduled to remain aloft during the night while observations are made.

Prof. Martin Schwarzschild of Princeton University is directing the project. Astronomers hope from the photographs to get a look at the surface of Venus, to analyze the divisions in Saturn's rings and to study atmospheric changes on Jupiter that may help explain the planet's red spot.

The program is sponsored by the National Science Foundation and the Office of Naval Research, with support from the National Aeronautics and Space Administration.

• Science News Letter, 79:24 January 14, 1961

NE FIELDS

ENDOCRINOLOGY

Female Sex Hormones Lessen Frog Parasites

► **FEMALE SEX HORMONES** play a part in holding parasitic infestation in check.

This is true for frogs, at least, E. Lees and L. Bass of the Institute of Technology, Bradford, England, have found.

The number of helminth or worm-like intestinal parasites in male frogs decreased after they were injected with the female hormone estradiol, they report in *Nature*, 188:1211, 1960.

Examination of some 500 frogs during a four-year period showed that during and immediately before the breeding season, in January and February, the helminth infestation was much higher in male than in female frogs. After the breeding season, the difference was less marked.

To test their assumption that the presence of female sex hormones lessens the infestation with parasites, the scientists took 50 male frogs known to be heavily infested with helminth parasites and injected half of them with a female sex hormone preparation, estradiol benzoate, during the 12-day period.

Postmortem examination at the end of three weeks showed marked lessening of the worm infestation among the injected males.

• *Science News Letter*, 79:25 January 14, 1961

GEOPHYSICS

Aurora Zone Best Take-off For "Live" Satellite

► **THE BEST PLACE** and time to send up a satellite or space capsule with life aboard may be where an aurora is occurring.

Drs. C. W. Gartlein and G. Sprague of the IGY Auroral Data Center at Cornell University, Ithaca, N. Y., reported that radiation in the auroral zone is likely to be less dangerous to man or other forms of life than that of the rest of earth's very high atmosphere. Although radiation is present, possibly enough to burn a person's skin, its dangers can be prevented by relatively light protection. Heavy lead would not be needed.

One way of diminishing radiation on a satellite would be to magnetize it. A satellite could be magnetized by a wire with a current running through it. If this were done, radiation would hit the satellite only on the top and bottom, the only spots that would need shielding. Solar batteries could possibly supply the current.

The scientists said their latest calculations seem to show two areas of heavy radiation "clouds," one above each of the earth's poles, in addition to the Van Allen radiation belts that circle the earth.

The polar radiation "clouds" are very large at the time of auroras but small and

patchy when no auroras occur. The radiation clouds produce radio disturbances as do auroras, they said.

Drs. Gartlein and Sprague said that both the auroras and radiation clouds above the poles are secondary results of events on the sun. They said some scientists believe that solar surface activity, such as storms, sunspots and flares, generally associated with auroral activity, may be a secondary effect of some process in the interior of the sun.

The scientists said their calculations about the radiation zones over the poles have yet to be verified. This could be achieved by satellite in a circumpolar orbit.

• *Science News Letter*, 79:25 January 14, 1961

PHARMACOLOGY

Swedish Drug Effective Against Influenza, Colds

► **FLUMIDIN**, an anti-influenza drug also effective against colds, has been developed after ten years of research by AB Kabi, a Stockholm pharmaceutical industry. Bengt Melander was in charge of the research work.

Flumidin contains a biguanide called ABOB, which is a chemical cousin to paludrine, a well-known anti-malarial drug.

Experiments carried out in Sweden and elsewhere showed that Flumidin, which is taken in tablet form, reduced the incidence of influenza attacks by 30% to 90%. Given to 883 employees of a Swedish industry, the drug was 94% effective against influenza and 64% effective against the common cold.

Another large field test covering 1,500 persons at three military establishments showed a 30% protective effect.

Once influenza has set in, Flumidin is said to reduce the length of the average attack from six to four days.

A similar drug called Virugon, first developed in Sweden, has been perfected by British chemists of the Winthrop Group. Virugon is said to be also effective against mumps, measles, chicken pox and shingles, all of which are caused by viruses.

Clinical tests are being made in the United States to determine the effectiveness of the virus-combating drugs. No predictions have been made as to when or if the new products might be available.

• *Science News Letter*, 79:25 January 14, 1961

SURGERY

Cats With Half a Brain Still Able to Hunt Mice

► **CATS ARE ABLE** to hunt mice and birds after one of the two brain hemispheres is removed, the Clinical Congress of the American College of Surgeons meeting in San Francisco was told. Drs. Joseph E. Bogen and Berry Campbell of the College of Medical Evangelists, Los Angeles, said that the animals also retain a variety of individual personality patterns and motor abilities in spite of the loss of the right half of the brain. Some imbalance was noted, however. One cat was baffled by a mouse that clung to its left shoulder.

• *Science News Letter*, 79:25 January 14, 1961

PHYSIOLOGY

Cool Environment Better Than Warm for Infants?

► **SOME NEWBORN INFANTS** may thrive better in a cool environment than a warm one.

Drs. Nicholas S. Assali and Bjorn Westin of the University of California, Los Angeles, Medical School are investigating this possibility under a grant from the Los Angeles County Heart Association and the U. S. Public Health Service.

Dr. Westin, a visiting scientist from the Karolinska Institute, Stockholm, Sweden, said physicians in many Scandinavian medical centers treat newborn infants who have difficulty in breathing by putting them in a cold environment and lowering the body temperature five to ten degrees.

The reasoning behind this is that as the infant's body is cooled, all life processes slow down and the infant has less need for oxygen.

Thus the infant's breathing mechanism has less strain and is able to make an easier adjustment to life outside the uterus. Statistics show that the survival rate of premature infants is especially high in Scandinavian countries.

The UCLA investigators are using experimental animals to determine if body cooling may affect this survival rate. Studies are being made of the effects of cool versus warm environment on the oxygen consumption as well as on the blood flow to vital organs of the mother and her unborn offspring.

Other studies compare the effects of body-cooling treatment on premature and full-term baby animals. Litters are divided so that half is in a warm environment after birth and half in a cold one. Preliminary tests indicate that the survival rate of baby animals kept at a cold temperature is higher.

• *Science News Letter*, 79:25 January 14, 1961

ASTRONOMY

Tailless Comet Celebrates New Year in Cassiopeia

► **A TAILLESS** comet began the New Year in the constellation of Cassiopeia, the queen, visible in the northern sky.

The comet Candy-Taylor was discovered by Dr. M. P. Candy and Gordon E. Taylor of the British Astronomical Association.

The fast-moving comet was of eighth magnitude and could be seen in the evening sky with binoculars. When discovered it was located near Polaris, the North Star.

On Dec. 26 its right ascension was 20 hours and 35.3 minutes with a daily motion of plus 57 minutes. Its declination was plus 76 degrees and 28 minutes of arc with a daily motion of minus two degrees and 45 minutes.

Discovery of the comet was reported to Harvard College Observatory, Cambridge, Mass.

• *Science News Letter*, 79:25 January 14, 1961

AGRICULTURE

Man's Chance to Prevent Famine

A U. S. soil expert has a plan to make underdeveloped countries more fruitful through better agriculture. Reclaiming eroded soil is key to future, Watson Davis reports.

► A NEW "DOWN TO EARTH" approach to making many areas of the earth more fruitful and more satisfactory for living is being advocated by one of the great pioneers in utilization and care of the land.

He is Dr. Walter C. Lowdermilk, now a young 72, for many years a leader in soil conservation in the United States Department of Agriculture and for the last 12 years since he "retired" consultant to various countries throughout the world for the Food and Agricultural Organization of the United Nations.

Better agriculture, decentralized small industries, and betterment of living in villages are the three central objectives of Dr. Lowdermilk's plan. His program has been worked out as a result of understanding and studying the conditions of subsistence agrarian economies that make up two-thirds of mankind now on the threshold of industrialization.

Even where the cooperation between various nations has been limited by war and strife, Dr. Lowdermilk has made substantial progress in reclaiming land that was all but destroyed by natural forces set in motion by human disuse. His experience in reclaiming the land is giving civilization a chance to win what Dr. Lowdermilk calls "a race with famine."

Population Increase a Challenge

The accelerating explosion of human population, already reaching serious proportions among the less developed nations of the world, is a tremendous challenge to statesmen, scientists, technologists and farmers of today.

Despite the embarrassing food surplus of the United States, created by the application of scientific agriculture, about two-thirds of mankind has neither learned nor practiced modern agriculture. Subsistence or peasant farmers are tilling the soil in much the same way that their ancestors did in the past centuries.

While there is what Dr. Lowdermilk calls "a revolution of rising expectations," about two-thirds of mankind are undernourished, poorly clothed and inadequately housed. Emerging new states have gained political freedom but are still not free from privations and want.

After the devastating famine in China in 1920-21, Dr. Lowdermilk studied in Asia the conditions that cause famine. He came to the realization that there is no substitute for food. In widespread hunger, people come to the realization that the life of nations rests upon food.

Only when there is more food produced than the farmers themselves require are other human beings released for enterprises

in the industrial world and the services that make up a modern society.

The very real and practical laboratory, which Dr. Lowdermilk has studied as a soil scientist, has been such areas as the Far East, Middle East, Africa and the United States. Most recently he has applied his knowledge to the modern state of Israel where amazing results have been achieved in creating a new agriculture to rescue man-made deserts.

In reclaiming the land, and causing it to bring renewed fruitfulness, it must be understood how water works to destroy and the way that soils and waters can be conserved. Years of experimentation on the land itself with extensive projects have allowed Dr. Lowdermilk and his fellow experts to manage the land and save it for the future.

Making the furrows of fields follow the contour of the land, with supporting measures, is the most important factor in restoring the land that has been eroded by rain. Human devotion to moving and plowing in straight lines allows running waters to ravage the land. Gullied areas of cultivated land become devastated and lost to agriculture.

Careful attention to how the land can be made to preserve itself and repair itself, by contour farming, is the method used to

restore ruined land. At this agricultural surgery, Dr. Lowdermilk is a past master.

In the redemption of the fruitfulness of the earth, Dr. Lowdermilk sees the farmer as the key person who in an understanding community will have a place of importance and honor. In a nation like Israel, where there is high motivation, the farmer is receiving recognition. Youth is less attracted to white-collar jobs and willing to work at productive skills and trades.

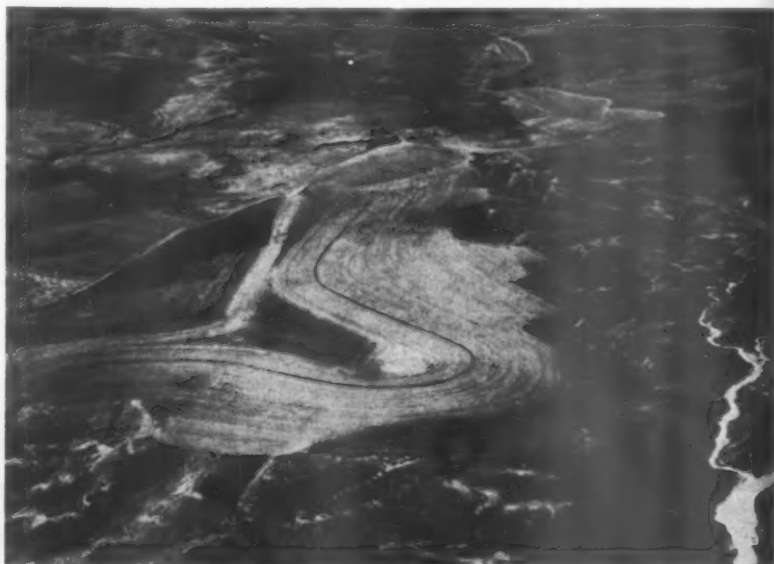
Dr. Lowdermilk feels that in most developed states of the world this direction can be given to youthful ambitions. Only with such foundations of agriculture alone can reclamation of the land be achieved.

Agricultural science now knows how land became worn and damaged and what needs to be done to bring it back to useful agricultural production.

Suggests Valleys or Drainage Basins

For the new agricultural developments that will bring self-support to an area, Dr. Lowdermilk suggests valleys or drainage basins as the units of operations. People will have a special interest in the hills and valleys that support them. The land they live on is sacred to the people. It is there that they will learn new skills and apply them for themselves, their children and their children's children.

Because tradition among farmers of less developed peoples is strong, persons who work the land are more skeptical and more demanding. The traditional farmer will support modern ways, Dr. Lowdermilk has



CONTOUR FARMING RECLAIMING LAND—Agricultural areas undergo erosion initiated by cultivation of small patches of land. This is a scene in the northern Negev of Israel where Dr. Lowdermilk applied his methods of saving the land.

land, only when he has the approval and support of farmers in his community. The farmer and his neighbors must be convinced that the new ideas will actually work.

Pioneer projects would consist of drainage basins of suitable size and with features that careful surveys show would be likely to produce successful results. Staffs of experts, an able director, and a consulting board would operate the project. The area to be included would not be large or too small but limited to a size that its inhabitants can know firsthand.

There would be three objectives:

1. Improvements in the method of agriculture that would result in greater production per crop, per unit area farmed and per man.

2. As manpower is released by this more productive agriculture, suitable decentralized industries would be created to take up this extra manpower.

3. Emphasis upon improvements in the villages and better transportation which would make life more pleasant and more efficient. Medical facilities, better water supply, better sanitation and better schools would follow along with the improved agriculture and decentralized industries.

If this kind of development can be gotten underway, Dr. Lowdermilk feels sure that there will be a renaissance in the agricultural civilization necessary to support the people of the earth.

He has an abiding confidence in the ability of peoples even in what are considered backward countries. He is fond

of telling how he found that in a West Africa country teachers from a well-developed European country assumed that native Negro children knew nothing.

Dr. Lowdermilk found, however, that practically every child by the age of 12 knew all the plants in his village by name. They did not know the botanical classification, of course. But each child could identify and tell whether the plants were poisonous or good to eat. This keenness of observation and this knowledge that came down from their surroundings and their families were impressive.

With such native ability, and with the newer knowledge simply and practically taught and integrated, Dr. Lowdermilk believes that these areas will be well on their way toward social and economic self-sufficiency.

Practical measures that work are of great importance in land and water conservation, utilization and reclamation. But for their continuous application, Dr. Lowdermilk observes that people of each nation must accept a moral responsibility for the good earth that not only feeds the present population but must feed the generations which are to come.

Land, in his view, is not just an economic commodity. It is a part of a nation even as its people are. Dr. Lowdermilk's conviction is that the food supply and the condition of land determines whether a nation rises, maintains itself or falls.

• Science News Letter, 79:26 January 14, 1961

MEDICINE

Mushroom Drug for Cancer

► AN ANTITUMOR agent, calvacin, has been found active against 14 various types of cancer and is now being prepared for clinical trial, probably within six months.

Calvacin, extracted from the fruiting bodies, or sporophores, of the giant puffball mushroom, *Calvatia gigantea*, is a "non-diffusible, basic mucoprotein." This type of drug is not now available for treating malignant tumors.

The first clue to the tumor-stopping ability of calvacin was discovered several years ago by a Michigan State University team headed by the late Dr. E. H. Lucas.

Since that time, MSU workers have screened hundreds of *C. gigantea* strains to find those that produce the most calvacin in the shortest time.

Scientists at Armour and Company, Chicago, isolated the calvacin from the sporophores and developed the fermentation process.

A third group at Sloan-Kettering Institute for Cancer Research, New York, tested the drug against 24 types of mouse, rat and hamster tumors. In 10 types of tumors, the drug prevented growth beyond a size one-fourth to three-fourths that of the control animals not given the drug. In four types of tumors, calvacin stopped the growth at one-fourth the size of the controls. In one type of cancer, the drug was toxic to the animal.

Dr. C. Chester Stock of Sloan-Kettering's team said calvacin was scheduled to be on

clinical trial by now, but difficulties in the fermentation process indicate that the drug will have to be extracted from the fruiting bodies instead. If all goes well, calvacin will go on clinical trial in New York by mid-1961.

The research was reported in Science, 132:1897, 1960, official journal of the American Association for the Advancement of Science, by Drs. J. F. Roland, Z. F. Chmielewicz, B. A. Weiner, A. M. Gross, O. J. Boening, J. V. Luck, all of Armour and Company, and Dr. T. J. Bardos, formerly with Armour, now at the University of Buffalo, N. Y., also Drs. H. Christine Reilly, K. Sugiura and Dr. Stock of Sloan-Kettering; and Dr. Lucas, R. U. Byerum and J. A. Stevens, all of MSU in East Lansing, Mich.

• Science News Letter, 79:27 January 14, 1961

Do You Know

The first traces of navigation ever discovered, wooden oars found on the coast of Denmark, date back to about 7000 B.C.

There are about 26 trillion cells in a human body.

In the world as a whole, three babies are born every second.

• Science News Letter, 79:27 January 14, 1961

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THE ANCIENT MYTHS—Norma Lorre Goodrich—*New Am. Lib.*, 256 p., illus., paper, 50¢. Original edition, recreates some of the great myths of ancient Sumer, Egypt, Crete, Greece, Persia, India and Rome.

ANDREE'S STORY: The Complete Record of His Polar Flight, 1897—S. A. Andree, Nils Strindberg and K. Fraenkel, transl. from Swedish, introd. by Vilhjalmur Steffansson—*Viking*, 246 p., illus., paper, \$1.45. From the diaries and journals found on White Island, summer 1930, and edited by Swedish Society for Anthropology and Geography.

ANTARTICA—Emil Schulthess, transl. by Peter Gorge—*Simon & Schuster*, 179 p., illus., \$15. Magnificent photographic documentation of the nature and beauty of Antarctica, including record of the course of the sun and many documentary pictures of U. S. 1958 IGY expedition. Printed in Switzerland.

THE APPLICATION OF QUANTITATIVE METHODS IN ARCHAEOLOGY—Robert F. Heizer and Sherburne F. Cook, Eds.—*Quadrangle Bks.*, 358 p., illus., \$7.50. Papers and discussions at the 1959 symposium held in Austria by the Wenner-Gren Foundation for Anthropological Research.

ASTRONOMY FOR YOU—Edmund Scientific Co., 16 p., illus., paper, single copies free upon request direct to publisher, Barrington, N. J. Short history of astronomy and information for the amateur astronomer, in comic-book style.

ATTITUDE ORGANIZATION AND CHANGE: An

Analysis of Consistency among Attitude Components—Milton J. Rosenberg and others—*Yale Univ. Press*, 239 p., \$5. Analyzes the relationship between affective, cognitive and behavioral components of attitude modification.

THE AUTOBIOGRAPHY OF SCIENCE—Forest Ray Moulton and Justus J. Schifferes—*Doubleday*, 2nd rev. ed., 748 p., \$5.95. Anthology recording notable scientific achievements in the scientists' own words.

BIBLIOGRAPHY AND INDEX OF GEOLOGY EXCLUSIVE OF NORTH AMERICA, Vol. 23—Marie Siegrist, Mary C. Grier and others—*Geological Soc. of Am.*, 822 p., \$13. Covers the literature on the geology of the eastern Atlantic and western Pacific Ocean basin published during 1958.

A COMPENDIUM OF SPHERICAL ASTRONOMY—Simon Newcomb—*Dover*, 444 p., paper, \$2.25. Reprint of 1906 edition, sets forth basic mathematical methods of determining, correcting or reducing observations of fixed stars.

DEVELOPMENT OF NUCLEAR RESEARCH IN THE CHINESE PEOPLE'S REPUBLIC—Chien San-ch'iang, transl. from Chinese—*OTS*, 6 p., 50¢. Article appeared in Russian-language Bulletin of the Academy of Sciences USSR, No. 4, 1960.

DISCOURSE ON BODIES IN WATER—Galileo Galilei, transl. by Thomas Salusbury, introd. & notes by Stillman Drake—*Univ. of Ill.*, 115 p., illus., \$5. Facsimile reprint of 17th century translation.

DISCOVERER: The Story of a Satellite—Michael Chester and Saunders B. Kramer—*Putnam*, 48 p., photographs, \$2.50. Describes in pictures and text the Project Discoverer, its Agena, Thor and Hustler rockets, for young people.

DRUGS AND BEHAVIOR—Leonard Uhr and James G. Miller, Eds.—*Wiley*, 676 p., \$12. Deals authoritatively with the effects of tranquilizers, energizers and other psychoactive drugs on human behavior and experience.

THE EFFECTS OF MASS COMMUNICATION—Joseph T. Klapper—*Free Press*, 302 p., \$5. Attempt to integrate the findings of published research concerning the effectiveness and limitations of mass media in influencing the opinions, values and behavior of their audiences.

ELECTRONIC SURVEYING: 1960 Developments—Rex H. Fulton and others—*Highway Res. Bd.*, Bull. 258, 31 p., illus., paper, 80¢. Discusses and evaluates the use of the tellurometer for highway survey control in four states.

THE ELEMENTARY PART OF A TREATISE ON THE DYNAMICS OF A SYSTEM OF RIGID BODIES—Edward John Routh—*Dover*, 7th rev. ed., 441 p., paper, \$2.35. Unabridged reprint of 1905 edition.

ESKIMO CHILDHOOD AND INTERPERSONAL RELATIONSHIPS—Nunivak Biographies and Genealogies—Margaret Lantis—*Univ. of Wash. Press*, 219 p., illus., \$4.75. Records recollections of Alaskan Eskimos, isolated in the Bering Sea, covering experiences from about 1880 to 1945.

THE FIGHT FOR THE SEA: The Past, Present, and Future of Submarine Warfare in the Atlantic—Commander David D. Lewis, U.S.N.—*World Pub. Co.*, 350 p., photographs, \$6. Explores present and future military strategy in a struggle between the Soviet Union and the Western Allies for control of the seas.

FOUR BIG YEARS: The Importance of Selecting the Right College—Richard W. Smith and Howard P. Sneath—*Bobbs*, 192 p., \$2.95. Explains the many considerations involved in choosing the right college for the individual boy or girl.

FROM ADOLESCENT TO ADULT—Percival M. Symonds with Arthur R. Jensen—*Columbia Univ. Press*, 413 p., \$8.75. Following up the late Professor Symond's book "Adolescent Fantasy" (1949), this book analyzes the correspondence between adolescent fantasy and the subject's adult experience and personality.

GRAPHIC SURVEY OF CHEMISTRY—William Lemkin; Vinton R. Rawson, Ed.—*Oxford Bk. Co.*, rev. ed., 470 p., illus., \$2.10; paper, \$1.25. Also contains model college entrance achievement test with explanatory comments.

HEALTH INSURANCE FOR THE AGED—F. J. Seidner—*Public Affairs Institute*, 63 p., paper, 50¢. Explores the major aspects of this controversial issue and evaluates bills, amendment and proposals before Congress.

INTRODUCTION TO NUCLEAR SCIENCE—Alvin Glassner—*Van Nostrand*, 213 p., illus., \$3.75. Elementary survey of nuclear science and its impact upon the other physical and natural sciences, includes 18 tested experiments using a minimum of special equipment.

JOHN MUIR'S STUDIES IN THE SIERRA—William E. Colby, Ed., foreword by John P. Buwalda—*Sierra Club*, 103 p., illus. with sketches by John Muir and photographs by Edward Muybridge, \$3.75. Studies in Sierra mountain sculpture, origin of Yosemite, glacial denudation and formation of soils.

LIVINGSTONE'S PRIVATE JOURNALS, 1851-1853—I. Schapera, Ed.—*Univ. of Calif. Press*, 341 p., illus., \$5. Fully annotated record of Livingstone's two journeys to North-Western Rhodesia, showing author's great interest in natural history.

LOUISIANA BIRDS—George H. Lowery, Jr.—*La. State Univ. Press*, 2nd ed., 567 p., illus. by Robert E. Tucker, photographs, \$7.50. A guide to 387 species of birds written from the regional point of view.

MARINE SCIENCES RESEARCH—U. S. Atomic Energy Commission Division of Biology and Medicine—*OTIS*, 40 p., paper, 50¢. Summarizes AEC-sponsored bio-medical work in progress at 13 institutions.

MECHANICAL-ELECTRICAL EQUIPMENT HANDBOOK FOR SCHOOL BUILDINGS: Installation, Maintenance and Use—Harry Terry—*Wiley*, 412 p., illus., \$9.50.

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PHYSICS FOR EVERYBODY—Germaine and Arthur Beiser, foreword by Henry A. Barton—*Dutton*, rev. ed., 191 p., illus., paper, \$1.15. Uncomplicated introduction to the basic laws and forces in physics, written for the general reader.

RUSSIAN-ENGLISH DICTIONARY OF OPERATIONAL, TACTICAL AND GENERAL MILITARY TERMS—N. N. Shkodunovich, Ed., transl. from Russian by U. S. Army—*OTS*, 359 p., paper, \$5. Defines 1,500 Russian operational, tactical and other military terms and concepts, originally published by the USSR Ministry of Defense for Soviet officers.

THE SCIENCE DOCTORATES OF 1958 and 1959: Their Numbers, Characteristics and Employment—National Academy of Sciences—National Research Council—*National Science Foundation (GPO)*, 28 p., paper, 25¢.

SCIENTIFIC PROGRESS, THE UNIVERSITIES AND THE FEDERAL GOVERNMENT—President's Science Advisory Committee, G. B. Kistiakowsky, Chmn.—*White House (GPO)*, 33 p., paper, 15¢. Presents specific conclusions and recommendations.

SOLID STATE PHYSICS: Advances in Research and Application, Vol. II—Frederick Seitz and David Turnbull, Eds.—*Academic*, 438 p., illus., \$12.50. Articles on semiconductor behavior, physics at high pressure and cyclotron resonance.

SPECIFICATION AND ENGINEERING WRITER'S MANUAL—Thomas S. Sawyer—*Nelson-Hall*, 231 p., \$6.95. Describes how to write properly prepared specifications and engineering documents.

STRUCTURE AND FUNCTION OF MUSCLE, Vol. II: Biochemistry and Physiology. Vol. III: Pharmacology and Disease—G. H. Bourne, Ed.—*Academic*, 593 p., 489 p., illus., \$16.50, \$15.00. Encyclopedic reference work concerning all aspects of muscle, skeletal muscle in particular. Includes comprehensive bibliographies.

STUTTERING AND WHAT YOU CAN DO ABOUT IT—Wendell Johnson—*Univ. of Minn. Press*, 208 p., \$3.95. Offers guidance, based on laboratory research, clinical observation and personal experience, to parents, teachers, doctors, friends and relatives of those who stutter.

TABLES AND NOMOGRAMS OF HYDROCHEMICAL ANALYSIS—I. Yu. Sokolov, transl. from Russian—*Consultants Bureau*, 85 p., paper, \$4.35. Tables for converting water analysis from one form to another.

THOUGHT REFORM AND THE PSYCHOLOGY OF TOTALISM: A Study of "Brainwashing" in China—Robert Jay Lifton—*Norton*, 510 p., \$6.95. A psychiatrist's objective analysis and psychological evaluation of the process of "thought reform" applied to Western prisoners and Chinese intellectuals; based upon research conducted in Hong Kong in 1954-55.

TOXICOLOGY: Mechanisms and Analytical Methods, Vol. I—C. P. Stewart and A. Stolman, Eds.—Academic, 774 p., \$22. Comprehensive reports on the many advances made in the methods of securing toxicological analyses.

TRANSLATION OF SOVIET ARTICLE URGING PERMANENT SUSPENSION OF NUCLEAR TESTING—Ye. K. Federov—*OTS*, 9 p., 50¢. Soviet view on criteria for detection of nuclear explosions as discussed at conferences of experts late in 1959.

TREES, SHRUBS AND WOODY VINES OF THE SOUTHWEST—Robert A. Vines—*Univ. of Texas Press*, 1104 p., illus., by Sarah Kahlden Arendale, \$25. Describes 1231 species covering plant habitats ranging from the subtropical lower Gulf Coast through temperate environments to the mountain areas of the West, en-

hanced by more than 1200 detailed botanical drawings.

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ULTRASONICS AND ITS INDUSTRIAL APPLICATIONS—O. I. Babikov, transl. from Russian—*Consultants Bureau*, 224 p., illus., \$9.75. Discusses generation and application of ultrasound in mechanical engineering and chemistry, metallurgy and medicine, in light industry, agriculture and power engineering.

THE UNION PACIFIC RAILROAD: A Case in Premature Enterprise—Robert William Fogel—*Johns Hopkins Press*, 138 p., \$3.50. Documented analytical examination of the political and institutional factors that influenced the construction of the first Pacific railroad.

WATER AND ITS RELATION TO SOILS AND CROPS—M. B. Russell, Coordinator—*Academic*, 131 p., illus., paper, \$4. Reprinted from *Advances in Agronomy*, Vol. II. Definitive and critical statement of present knowledge in the field.

WELFARE IN AMERICA—Vaughn Davis Bornet—*Univ. of Okla. Press*, 319 p., \$4.95. Analytical examination of public and private welfare instrumentalities and the techniques employed by them.

• Science News Letter, 79:28 January 14, 1961

SURGERY

Plastic Surgery Helps Morale of Worriers

► A MAN WORRIED over his bat-ears and a girl concerned over her undeveloped breasts were made normal by plastic surgery, it is reported in the *British Medical Journal*, Dec. 17, 1960. Both had been diagnosed as mentally ill.

Drs. David Stafford-Clark and Patrick Clarkson of Guy's Hospital, London, collaborated on research concerning the "surgery of appearance." They found that patients should be carefully selected for operations involving combined plastic and psychiatric treatment.

Plastic surgeons and psychiatrists share a joint awareness, the scientists said, of the close relationship linking "facial appearance, bodily proportion, and the overall function and structure of human beings to their morale and personal identification."

The scientists emphasized that combined psychiatric and surgical appraisal must be made of cases applying for plastic surgery. Surgery should never be undertaken for psychotic patients during periods of acute upsets. Three factors should be considered:

1. The degree of reasonable success to be expected from a technical standpoint.
2. The extent to which the patient is capable of a realistic appreciation of the risks, and is affected by the state he is in.
3. The patients' capacity to tolerate failure of plastic surgery, as assessed by psychiatric examination and rapport.

Both suicidal attempts and assaults on the plastic surgeon have occurred after plastic operations that are unsatisfactory.

• Science News Letter, 79:29 January 14, 1961

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PUBLIC HEALTH

Peaches-Cream Cosmetics

► PEACHES AND CREAM literally can provide that "peaches-and-cream" complexion every woman wants, Dr. Glen J. Sperandio, associate professor of pharmacy at Purdue University, Lafayette, Ind., reported.

Cosmetics can and should be safe, pure, and "good enough to eat," he reported at a symposium on "danger-free" cosmetics at the American Association for the Advancement of Science meeting in New York. The symposium was cosponsored by the American Medical Association.

The scientist-advocate of edible cosmetics recommended peaches, cream and other foodstuffs as a primary source of the "very safest materials that might be used in cosmetics."

He said foods contain most of the basic types of materials used in cosmetic manufacture: oils, creams and starches. Their safety has already been established.

Dr. Sperandio said he and two assistants had produced a highly successful complexion lotion "made basically from peaches and cream," and an anti-chapping cream "prepared mainly from tapioca." Tests of both products showed they were as good or better than available counterparts.

The team also prepared a liquid make-up composed mainly of chocolate syrup and mashed potatoes.

Safe, edible ingredients for a cosmetic are, however, only one requirement for an entirely danger-free beauty product. Other requirements include an effective quality control program, more stringent laws for proper packaging, and complete and clear labeling.

Dr. Sperandio predicted more therapeutic cosmetics for allergic individuals and geriatric cosmetics that are scientifically formulated to benefit aging skin. He also predicted that in the next ten years the American male will use virtually as many cosmetic products as the female now does.

Another Purdue University professor, Dr. William F. Bousquet, recommended the use of radioactive isotopes to study the penetration of cosmetic ingredients into the skin.

• Science News Letter, 79:30 January 14, 1961

Tranquilizer and Disease

► THE TRANQUILIZER chlorpromazine alters the natural resistance of animals to amoebiasis, or amoebic dysentery, but the drug has no direct effect on the infecting amoebae, the American Association for the Advancement of Science meeting in New York was told.

Guinea pigs experimentally infected with amoebiasis showed no ulcers or amoebae in the intestinal cavity five days later. By the tenth day of treatment, however, ulcers may perforate the intestinal wall of the chlorpromazine-treated animals and spill amoebae into the intestinal canal.

Reporting the experiment were Dr. Svetoazar D. Teodorovic of Mount Sinai

Hospital, New York, and Dr. James Ingalls and Leo Greenberg of the Brooklyn College of Pharmacy.

In other experiments the scientists gave guinea pigs adrenal cortical hormones before and for several days after infection with amoebiasis. A marked increase in the amount and intensity of inflammation, compared to untreated animals, was usually found.

Experimentally produced amoebiasis in guinea pigs resembles the human disease, which is a widespread and important health problem. The researchers chose it as a good experimental model for a study of the good or harm corticosteroids and tranquilizing drugs might produce in patients with an infectious disease.

• Science News Letter, 79:30 January 14, 1961

Female Homosexuality

► FEMALE HOMOSEXUALITY has no physical, organic, hormonal or neurological basis, Dr. Richard C. Robertiello, chief psychiatrist, Long Island Consultation Center, Forest Hills, N. Y., reported.

The causes are psychological rather than organic; and the only hope for cure is by psychoanalytic therapy, he said at the American Association for the Advancement of Science meeting in New York.

Many of the psychological factors that produce female homosexuality "may also be found in women who have other severe neurotic problems but are not homosexual," Dr. Robertiello emphasized. A homosexual seduction in childhood or adolescence may be the determining "factor as to whether a person becomes homosexual."

Based on his successful treatment of three Lesbians as well as from clinical observation and study, Dr. Robertiello said the family history of most of them revealed a good proportion, if not all, of certain situations.

Such situations include a sexually competitive mother, an overly restrictive mother, a cold unloving mother, a brutal father, a seductive father, a cold unloving father, an overly restrictive father, a poor relationship between parents, a seductive older brother, a sexually competitive older sister, and a sibling favored by the parents.

There are many women, however, with the same "psychodynamic pattern," who do not turn to homosexuality but to some other neurotic solution, such as masochism, sexual abstinence or alcoholism, he said.

The female homosexual or "Lesbian" tends to view the normal relationship between a man and a woman as one in which the man is exploiting and using the woman. She considers a man indifferent and, indeed, incapable of any tenderness or affection toward his female sexual partner.

Psychoanalytic therapy appears to offer the only hope for cure of Lesbianism; but this does not mean "all or even most Lesbians are treatable by psychoanalytic therapy."

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apy," he warned. For success in treatment, the patient "at least must have a basic dissatisfaction with herself."

• Science News Letter, 79:30 January 14, 1961

Isolated Bluebirds Silent

► YOUNG BLUEBIRDS reared in isolation from adult songsters will never be able to sing, James M. Hartshorne, ornithologist from Cornell University, Ithaca, N. Y., has reported.

"Before it is a little more than a year old, a young bluebird must hear the song of an experienced adult or it will never be able to sing the typical song of its species," he told the American Association for the Advancement of Science meeting in New York.

Birds kept in isolation from the egg and nestling stage were able to sound the normal bluebird call notes of alarm, distress, aggressiveness and special location sounds, but their songs never developed beyond soft random warblings known as subsong.

Birds reared in isolation from fledglings (juveniles out of the nest up to two months of age) were able to utter the common call notes and the typical or primary song as well. This indicates a young bluebird can produce its full vocal repertoire if it has contact with experienced birds of its own species during the first two months of its life," Mr. Hartshorne said.

If the isolated birds were exposed to adult vocalizations at any time prior to 15 months of age, they could produce their species typical song. In fact, the young birds, when first hearing their species song, became wild with excitement and soon tried to repeat it. After 15 months of isolation, however, no matter how much the birds were exposed to the song, they were incapable of producing it.

In their quiet world of isolation, the bluebirds raised a family of young. Mr. Hartshorne said, however, that it was unlikely such birds could meet with success in the wild, because lack of song would be too great a handicap.

• Science News Letter, 79:31 January 14, 1961

INVENTION

Jet Pilot Training Aid Simulates Compass

► A NAVIGATIONAL AID that trains jet-age pilots without their leaving the ground can even accurately simulate the errors occurring in instruments under actual flight conditions.

Edward G. Schwarm of Binghamton, N. Y., has invented a device simulating the operation of a magnetic compass that gives the direction an airplane is traveling. The invention actually gives the "accurate" compass error that always results when a plane changes direction or its speed.

The proper correction of compass error, caused by the limitations of the compass systems, is an important phase of the precise navigation required in present-day jet travel, according to the inventor. Mr. Schwarm's device was awarded patent No. 2,965,976, which he assigned to General Precision, Inc.

A vehicle that can travel over rough land, swamps and lakes has been granted a patent by the U. S. Patent Office. The vehicle is essentially an engine mounted on a platform balanced on four oversized, air-filled rollers. It can maintain an essentially horizontal position even when driven on the side of a hill.

In addition to the driving mechanism for moving the rollers, an additional shaft is provided in the differential for attaching a propeller to navigate over bodies of water.

The vehicle is reported to be very compact so that it may be shipped with ease and speed. Vernon E. Gleasman of Cleveland Heights, Ohio, won patent No. 2,966,223 for this invention, which he assigned to The White Motor Company of Cleveland.

Persons with a broken leg can now move around more easily while the bone is mending, thanks to Arthur L. Purcell, Baldwin Park, Calif. Mr. Purcell has invented an adjustable walking iron, a device that is applied to a cast of the fractured leg to permit substantial use of the injured member during the healing period.

The walking iron, which received patent No. 2,966,154, consists of adjustable metal plates attached to an iron block. The metal plates can be easily secured to the cast by interlocking them with plaster of Paris.

A method and apparatus for electrical prospecting won patent No. 2,966,627 for James E. Hawkins of Broken Arrow, Okla., who assigned his rights to the Seismograph Service Corporation, Tulsa. Radio signals sent out from one or more transmitting points are received at other movable points, the relationship between the received signals indicating various geological formations through which the radio waves have passed.

• Science News Letter, 79:31 January 14, 1961

ROCKETS AND MISSILES

Centaur Booster Stage Has Added Fuel Capacity

See Front Cover

► THE BOOSTER STAGE of the National Aeronautics and Space Agency's Centaur launch vehicle is being assembled at Convair Astronautics Division of General Dynamics Corporation, San Diego, Calif. The booster airframe, seen on the cover of this week's SCIENCE NEWS LETTER just beyond the missile in the foreground, is not tapered in the forward end. This gives the booster added fuel capacity.

• Science News Letter, 79:31 January 14, 1961

Questions

ASTRONOMY—What information do scientists hope to get from photographs taken at an altitude of 80,000 feet? p. 24.

EDUCATION—How many percent of students questioned knew the name of the U. S. Secretary of Defense? p. 20.

SOCIOLOGY—How is I.Q. measured? p. 19.
Photographs: Cover, Convair Division of General Dynamics Corporation; pp. 19 and 23, General Electric Company; p. 21, California Institute of Technology; p. 26, Walter C. Lowdermilk; p. 32, Minnesota Manufacturing and Mining Co.

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❁ **CHILD'S DRINKING STRAW** of polyethylene plastic is a hollow globe, with a mouthpiece on one side and a lip on the other, that turns ordinary soda into a fizzy, flavorful treat. Ice or ice cream is put in globe and its lip is inserted in bottle neck. As soda is sucked through the globe, it stirs up a rich cold froth.

• Science News Letter, 79:32 January 14, 1961

❁ **UTILITY KNIFE** has retractable blade controlled by safety button. A push of the button can project and retract razor-keen blade from the handle to two cutting positions: fully extended and one-quarter extended, the correct depth for opening cartons. Contoured 6½-inch handle has storage area for extra blades.

• Science News Letter, 79:32 January 14, 1961

❁ **CONCRETE PATCH** for do-it-yourself repairs on all concrete surfaces, swimming pools, and open brick or stone joints is rubber-based and more resilient than concrete. It does not crack when exposed to expansion and contraction, is excellent for leveling uneven surfaces, and will adhere to almost any surface.

• Science News Letter, 79:32 January 14, 1961

❁ **DISPOSABLE HOSPITAL MASK**, shown in the photograph, has more than 90% bacteria filtration, adjusts to any face, reduces fogging of glasses, provides unobstructed field of vision and allows easy



speech. It has no contact with the face, except at the edge. Saucedish-shaped, the entire fabric of the random-web, non-woven mask serves as a filter, giving five times the filtering area of gauze masks.

• Science News Letter, 79:32 January 14, 1961

❁ **DISPOSABLE MOLDS** for serial sectioning of biological specimens are made of polyethylene plastic that is not affected by

hot paraffin and refrigeration. They permit easy and economical embedding of specimens in paraffin or celloidin and can be peeled away after the paraffin has hardened. Molds come in a variety of sizes.

• Science News Letter, 79:32 January 14, 1961

❁ **PERSONAL RADIATION MONITOR**, about the size of a fountain pen, emits a warning tone and flashes a small neon lamp in the presence of a gamma radiation field. Its greatest value would be the immediate warning given in a radiation accident. Developed at Oak Ridge National Laboratory, it is not yet on the market; but some of the new instruments are being purchased by ORNL from commercial manufacturers.

• Science News Letter, 79:32 January 14, 1961

❁ **TOILET LATCH** prevents baby from dropping toys and other objects in the bowl and can be attached quickly and easily without tools. Made entirely of plated steel, it does not mar equipment and is sanitary and easily removable by adults and older children.

• Science News Letter, 79:32 January 14, 1961

❁ **NAILSET** has a rubber pillow to serve as a safety grip and wedge for pulling out nails without marring the surface. Wedge prevents nailset from rolling away and takes the sting out of setting.

• Science News Letter, 79:32 January 14, 1961



Nature Ramblings



► **ATTRACTIVE** as the idea of hibernation may be—to curl up in a ball and sleep while the rest of the world scurries through the snow in search of food—few mammals spend the winter in this manner.

Some mammals, such as the common skunk, hibernate only during the severest weather and rarely for more than a month at a time. The black bear is a light sleeper and is easily awakened. Its lethargy does not become so deep nor does its temperature drop so low as in other hibernating mammals.

Winter-long hibernation overtakes only a few of our furry friends, such as the woodchuck, the chipmunk, the raccoon, the jumping or kangaroo mouse, and the woodland jumping mouse. These small creatures retreat to their dark, quiet burrows and dens between September and November and emerge in February or March. The little brown bat, another winter sleeper, hangs himself upside down in his own cave or migrates to another, more suitable

Mammalian Hibernation



hibernating shelter.

Although cold, hunger, darkness and quiet are important in bringing about hibernation, the phenomenon remains a puzzle. Different individuals of the same species show a wide variation in response to these factors and, when kept in a zoo, natural hibernators seldom if ever hibernate.

Experts do know that particular physiological changes take place before and during hibernation. Mammals unconsciously prepare for their long sleep by weeks of heavy eating and fattening, and the fatter animals become dormant sooner and wake up later

than the thinner ones.

Hibernation comes about slowly, beginning with a short sleep, a period of waking, a longer sleep, waking and eventually a deep lethargy. One study of woodchucks showed that the transition from full activity to deep dormancy is accomplished within three to 30 days.

In hibernating ground squirrels, the spleen is enlarged; the woodchuck's parathyroid gland appears to be inactive; and in all hibernators body temperature drops drastically, and breathing rate and heart rate become slow and irregular.

The active woodchuck has a heart rate of 80 beats per minute, a temperature of 98.6 degrees Fahrenheit, and a breathing rate of 25 to 30 per minute. By contrast, the hibernating woodchuck may have a heart rate of four to five beats per minute, a temperature of 38 degrees Fahrenheit, and a breathing rate of one per minute.

—GLORIA BALL

• Science News Letter, 79:32 January 14, 1961

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